

What is claimed is:

1. A monoclonal antibody, MAb 4A2-2, produced from hybridoma cell line ATCC PTA-971.

2. A monoclonal antibody, MAb 6B2-2, produced from hybridoma cell line ATCC PTA-969.

3. A monoclonal antibody, MAb 6C2-4, produced from hybridoma cell line ATCC PTA-970.

4. A continuous hybridoma cell line having deposit accession number ATCC PTA-971, and clones thereof, which cell line produces monoclonal antibody to BoNT/A.

5. A continuous hybridoma cell line having deposit accession number ATCC PTA-969, and clones thereof, which cell line produces monoclonal antibody to BoNT/A.

6. A continuous hybridoma cell line having deposit accession number ATCC PTA-970, and clones thereof, which cell line produces monoclonal antibody to BoNT/A.

7. A monoclonal antibody which binds an epitope comprising amino acids 1150-1289 of BoNT/A.

8. A monoclonal antibody which binds an epitope comprising amino acids 1157-1181 of BoNT/A.

9. A monoclonal antibody which binds an epitope comprising amino acids 1230-1253 of BoNT/A.

10. A monoclonal antibody which binds an epitope comprising 1157-1253 of BoNT/A.

5 11. A DNA sequence encoding an antigen binding domain of the monoclonal antibody of claim 1, and any portion thereof still capable of binding to said antigen.

10 12. A DNA sequence encoding an antigen binding domain of the monoclonal antibody of claim 2, and any portion thereof still capable of binding to said antigen.

15 13. A DNA sequence encoding an antigen binding domain of the monoclonal antibody of claim 3, and any portion thereof still capable of binding to said antigen.

16 14. A method for detecting BoNT/A said method comprising:

20 (i) incubating a sample with an effective amount of at least one monoclonal antibody against BoNT/A, under conditions which allow the formation of an antibody-BoNT/A complex; and

25 (ii) detecting the antibody-BoNT/A complex wherein the presence or absence of the complex indicates the presence or absence of BoNT/A in the sample.

30 15. A method for detecting BoNT/A according to claim 14 wherein said monoclonal antibody is chosen from the group consisting of 4A2-2, 6B2-2, and 6C2-4.

16. A method for detecting BoNT/A according to claim 15 wherein, said sample is water, biologicals, pharmaceuticals, or food products.

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17. A method of treating BoNT/A intoxication comprising administering to a patient in need of said treatment an amount of a monoclonal antibody selected from the group consisting of: 4A2-2, 6B2-2, and 6C2-2 sufficient to effect said treatment.

18. A pharmaceutical composition comprising the monoclonal antibody of claim 1 in a concentration sufficient to inhibit botulism poisoning, together with a pharmaceutically acceptable carrier.

19. A pharmaceutical composition comprising the monoclonal antibody of claim 2 in a concentration sufficient to inhibit botulism poisoning, together with a pharmaceutically acceptable carrier.

20. A pharmaceutical composition comprising the monoclonal antibody of claim 3 in a concentration sufficient to inhibit botulism poisoning, together with a pharmaceutically acceptable carrier.

21. A kit for detecting BoNT/A in a biological sample, said kit comprising:

(1) a container holding at least one monoclonal antibody selected from the group consisting of MAb 4A2-2, MAb 6B2-2, and MAb 6C2-2; and

(2) instructions for using the antibody for the purpose of binding to BoNT/A to form an immunological complex and detecting the formation of the immunological complex such that presence or absence of immunological complex correlates with presence or absence of BoNT/A in said sample.

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22. A vaccine for BoNT/A comprising antigenic peptide epitopes recognized by at least one monoclonal antibody selected from the group consisting of 4A2-2, 6B2-2, and 6C2-2.

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23. A vaccine according to claim 22 wherein said peptides are chosen from the group consisting of SEQ ID NO:2 and SEQ ID NO:3.

10 24. A vaccine according to claim 22 wherein said peptides comprise the region of BoNT/A Hc encompassing amino acid residues 1150-1289 (SEQ ID NO:1).

15 25. A vaccine according to claim 24 wherein said peptides comprise the region of BoNT/A Hc encompassing amino acid residues 1157-1253 of SEQ ID NO:1.

20 26. A pharmaceutical composition comprising a peptide encoded by any of SEQ ID NO:2 and SEQ ID NO:3, in a pharmaceutically acceptable amount, in a pharmaceutically acceptable carrier and/or adjuvant.

25 27. A method for capturing BoNT/A from a sample, said method comprising contacting said sample with one or more monoclonal antibody selected from the group consisting of 4A2-4, 6B2-2, and 6C2-2, and isolating the complex formed between the BoNT/A in the sample and the monoclonal antibody.

30 28. The method according to claim 27 wherein said sample is selected from the group consisting of: biological fluid and animal tissue.